Recommendations for the European Chips Act 2.0

by Silicon Europe Alliance (SEA)

About Silicon Europe Alliance

Silicon Europe, the leading European alliance of 14 European clusters in (micro)electronics and digital technologies, fosters transnational collaboration across semiconductors, photonics, cybersecurity, AI, quantum, and emerging technologies, supporting SMEs and start-ups while driving innovation, competitiveness, and European technological sovereignty for a green and resilient economy.

Silicon Europe Alliance partner clusters

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Key Recommendations

Semiconductors are the enabler of modern industry: without chips, entire value chains, digital innovation, and technological sovereignty come to a halt. As global dependencies deepen, geopolitical dynamics accelerate and technology cycles shorten, Europe must strengthen its strategic capabilities. This requires expanding manufacturing capacities, accelerating the commercialization of research and securing a highly skilled workforce.

Under the European Chips Act (ECA), many initiatives have been launched to strengthen Europe's semiconductor industry. To address the challenges and requirements mentioned above, these efforts must be continued and intensified, with ECA 2.0 going beyond continuity to drive strategic, coordinated action. Strong clusters / meta-clusters, particularly the Silicon Europe Alliance (SEA), are the backbone of this strategy by connecting SMEs, start-ups, research institutions and larger companies within a resilient semiconductor ecosystem.

SEA key recommendations

1. **Strengthening Cluster Participation**
   Cluster organisations, as the SEA, should play a greater role in the revised ECA, leveraging its cross-value-chain approach and cross-border coordination. SEA should be actively involved in the European Semiconductor Board, especially given their large SME membership.

2. **Closing the Lab-to-Fab Gap**
   Direct integration of industrial companies for example into pilot lines is essential to accelerate the transfer of research into manufacturing. Strengthening collaboration between research institutions and industry will ensure that innovations are efficiently scaled and brought to market. Furthermore, a close link to the ECS's Strategic Research and Innovation Agenda (SRIA) is necessary. To further strengthen the EU value chain, future Chips JU calls should integrate Cascade Funding / FSTP to support microelectronics SMEs.

3. **Investing in Strategic Manufacturing and Value Chains**
   Expanding capacities across the entire semiconductor value chain is important, while also ensuring access to critical materials, stimulating demand and remaining flexible to technological shifts and crises. Therefore, targeted incentives and requirements, including in publicly funded projects as EU-supported AI gigafactories, are also crucial.

4. **Developing a Future-Ready Workforce and Skills Ecosystem**
   Integration of semiconductor technology skills training at all levels of education – from promoting STEM in schools to supporting lifelong learning – must be continued and deepened in EU funding instruments, especially in view of the MFF 2028+. Also in this context, the just established CCCs must receive continued support within the ECA 2.0**.**

5. **Enhancing Competitiveness**
   To remain an attractive and competitive location for semiconductor investments, Europe must focus on three interlinked dimensions in ECA 2.0: access to financing, streamlined procedures, and lower energy prices to strengthen industrial competitiveness.

6. **Expanding International Cooperation**
   Strategic partnerships with key global players – such as Japan, Canada, Taiwan, and Korea – provide a foundation for knowledge exchange, joint research, and securing supply chains for critical technologies and materials. Building on this, Europe should reinforce regional and global collaborations based on reciprocity and shared standards.

Background

The current European Chips Act (ECA 1.0) aims to strengthen Europe's position in semiconductor research and manufacturing. Nevertheless, despite numerous successful initiatives, Europe's dependence and associated vulnerability in this sector, which is fundamental to many areas of the economy, remains high.

It is already evident that the 2030 targets set by the current European Chips Act will not be achieved. The reasons for this are, on the one hand, that capacity building is insufficient and, on the other hand, that essential parts of the value chain are not or hardly addressed within the current legal framework. This also applies in particular to key technologies such as AI logic and memory chips – areas where strategic dependencies are growing rapidly.
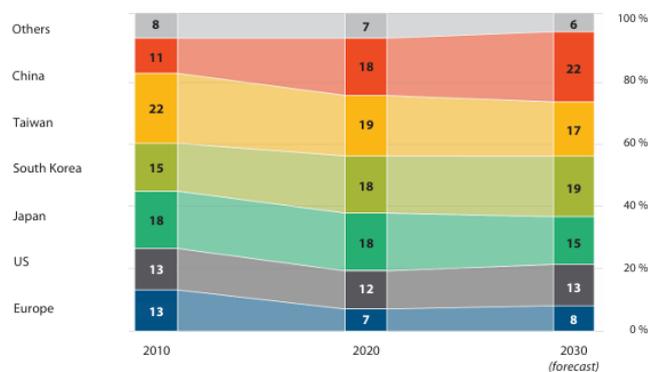
Note: All values shown in 200 mm wafer size equivalents; the chart excludes capacity below 5000 wafer starts per month or less than 200 mm. This reflects the modern semiconductor manufacturing facilities capacity, where wafer diameter is greater than or equal to 200 mm.
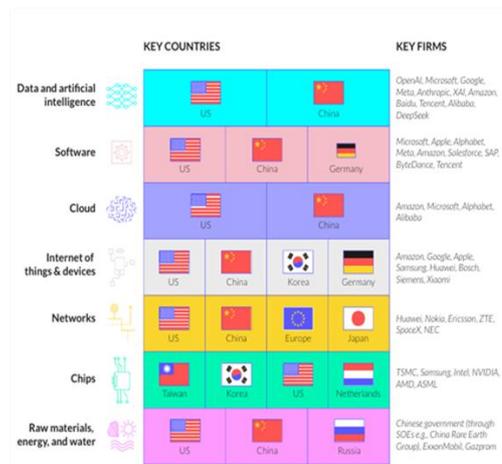
Figure 1 (left): Share of global chip capacity by regions in 2010 – 2030, source: ECA based on BCG and SIA study "Emerging resilience in the semiconductor supply chain", 2024 | **Figure 2 (right):** Key countries and leading firms in each stack layer, source: EuroStack – A European Alternative for Digital Sovereignty, 2025 (p. 52)

In view of the rapidly changing geopolitical landscape, including export restrictions and rising trade barriers, and the simultaneous massive capacity expansions across the entire value chain and technological spectrum – particularly in the United States and China – strengthening the European semiconductor industry is more critical than ever. Semiconductors form the foundation of all future technologies, making secure and competitive European value chains a strategic necessity for Europe's resilience and digital sovereignty.

The shortcomings of ECA 1.0 make it clear that ECA 2.0 must go beyond mere continuation. It should significantly accelerate capacity building, strengthen research and innovation across the whole semiconductor value chain – particularly in key technologies such as AI logic and memory chips – and address critical gaps to ensure Europe's competitiveness, resilience and sovereignty in the face of growing global competition and geopolitical risks.

Key Priorities & Recommendations

European Chips Act 2.0 is essential for Europe's technological and economic future. Addressing this requires intensified efforts to ensure that capacity building, research, and innovation across the semiconductor value chain fully meet Europe's strategic needs.

To support these efforts, it should be embedded in a comprehensive, long-term European Chips Strategy that clearly defines both objectives and implementation, ensuring that national strategies and initiatives are aligned with the EU-wide approach. The strategy should also consider European funding instruments and foster industrial cooperation across the continent.

The overarching targets remain clear:

- Strengthening Europe's economic resilience
- Increasing digital and technological sovereignty
- Securing robust, competitive, and sustainable supply chains

1. Strengthening Cluster Participation

SEA calls for strengthening the strategic role of European semiconductor clusters in ECA 2.0 and their active involvement in its governance, for example in the European Semiconductor Board.

Justification

Cluster organisations, in particular the SEA, play a central role in Europe's semiconductor ecosystem by facilitating knowledge and technology transfer between research institutions, start-ups, SMEs, and large companies. They provide targeted support to SMEs along the value chain and connect local and regional actors to form a pan-European innovation network.

Clusters contribute significantly to the planning and implementation of strategic priorities, supporting the development and execution of the ECA as well as other relevant European and national legislation. They enable collaboration across the entire value chain and foster cross-border and international coordination. By establishing comprehensive market monitoring and intelligence systems, clusters support strategic decision-making. Furthermore, they drive political and economic leverage through direct collaboration with neighbouring countries and EU-wide initiatives such as the European Semiconductor Regions Alliance (ESRA).

2. Closing the Lab-to-Fab Gap

SEA calls for closing the existing lab-to-fab gap by a better and more comprehensive transfer of research results into manufacturing, for example by involving industrial companies in pilot lines and to accelerate connections between Europe's semiconductor clusters. In addition, ECA 2.0 must be closely linked to the ECS's Strategic Research and Innovation Agenda (SRIA).

Justification

Closing the existing lab-to-fab gap requires a substantially faster and better-coordinated transition from research excellence to industrial deployment across Europe. Today, this transition is still too slow, fragmented, and insufficiently linked to industrial needs. A key measure is the immediate and straightforward integration of industrial companies into pilot lines, as these

currently operate without direct industrial involvement. Ensuring a clear connection between pilot lines under Pillar 1 and industrial implementation under Pillar 2 is essential to translate research outputs into manufacturable technologies.

ECA 2.0 requires close linkage with the ECS Strategic Research and Innovation Agenda (SRIA) to ensure coherence between research priorities, industrial needs, and public funding. To further strengthen the European chips value chain, future Chips JU calls should incorporate Cascade Funding / FSTP as a mechanism for providing rapid, targeted support to microelectronics SMEs. A stronger alignment between Horizon Europe, the Chips JU, and national R&D programmes is essential to prevent fragmentation, eliminate duplication, and create a seamless, coordinated European semiconductor innovation framework

3. Investing in Strategic Manufacturing and Value Chains

SEA calls to prioritise a targeted expansion of Europe's semiconductor manufacturing and innovation capacities across the entire value chain, with a focus on closing key technology gaps. It also calls for fully integrating companies of all sizes and strengthening both upstream inputs and downstream demand to build a resilient and competitive European semiconductor ecosystem.

Justification

A strengthened semiconductor ecosystem requires targeted expansion of capacities along the entire value chain, particularly in areas where Europe faces significant technological gaps such as design, photonics, advanced packaging, and both cutting-edge and mature manufacturing nodes. At the same time, emerging fields as AI, quantum, and neuromorphic technologies need focused support to secure Europe's position at the global innovation frontier.

Effective investment prioritization demands a sector- and needs-based approach that remains flexible enough to respond rapidly to market shifts or crises. Upstream resilience must be reinforced through secure access to critical raw materials and strong mechanical-engineering capabilities. Downstream, measures should ensure sufficient demand for chips 'Made in the EU' through tailored incentives in EU procurement law and tenders, following a clear business-case approach as endorsed by industry stakeholders.

4. Developing a Future-Ready Workforce and Skills Ecosystem

SEA calls to establish an integrated European skills strategy for the semiconductor sector, encompassing a continuous education and training pathway, specialized reskilling and upskilling programs, and close cooperation between research, education, and industry. At the same time, it calls for increasing the attractiveness and visibility of careers in microelectronics to build a broad, diverse, and future-ready talent pool.

Justification

According to the European Chips Skills Academy's (ECSA) analysis, the European semiconductor industry is expected to grow by 4.5 percent annually from 2025 to 2030, increasing the number of skilled workers by over 250,000 and reaching 519,000 employees by 2030.[1] Ensuring a sufficient supply of qualified personnel is therefore crucial, as Europe cannot maintain its competitiveness

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[1] ECSA (2025): Skills Strategy 2025, Final-Skills-Strategy-2025-Nov2025.pdf .

or achieve technological leadership without a skilled workforce. The growing demand for specialized skills across the entire value chain – from design and manufacturing to packaging and system integration – requires targeted reskilling and upskilling initiatives, as well as flexible training programs.

To meet this demand, stronger collaboration between research institutions, industry, and educational organizations is essential to accelerate knowledge transfer and develop industry-relevant skills. Cross-border programs further enhance talent mobility and exchange, while increasing the visibility of microelectronics careers and promoting young people and women in STEM fields helps to expand and secure a diverse, future-ready talent pool. EU-funded retraining and upskilling programs under ESF+ and Horizon Europe, specifically for semiconductor and microsystem technologies, are key to ensuring the workforce can rapidly adapt to emerging technological requirements and keep pace with evolving industry needs.

Competence Centres on Chips, that have just been established, are promising initiatives, inter alia in this context, that are worth to be supported in ECA 2.0.

5. Enhancing Competitiveness

SEA calls for securing Europe's semiconductor competitiveness through streamlined and flexible administrative processes, sufficient and predictable funding as well as reduced energy costs across all stages of the value chain. At the same time, it calls for strengthening European semiconductor manufacturing, including upstream and downstream value-chain capabilities, and accelerating the development of disruptive technologies to attract investment, foster innovation and ensure strategic independence.

Justification

Financing: Sufficient and internationally competitive funding must be secured within the MFF 2028+, as stable funding is critical to attract private investment and enable long-term strategic planning. Microelectronics should be explicitly included as a promoted technology. In addition, existing state aid concessions must be retained, as they have been key to capacity building under the current ECA.

Process acceleration & adjustment: Administrative procedures must become faster, less burdensome, and more predictable. The current two-stage approval process and frequent procedural changes slow implementation and reduce flexibility. Adjustments during projects for technological or market reasons are currently complex and bureaucratic; a flexibility clause within ECA 2.0 is needed to enable timely adaptations.

Risk assessment: Given geopolitical shifts, export restrictions, and trade barriers, strengthening Europe's semiconductor manufacturing base is critical, as chips underpin all future technologies. Pilar 3 of the current legal framework should be further developed to prevent disruptive cases like NEXPERIA, and the time-to-market of disruptive technologies must be accelerated to maintain competitiveness.

Cost reduction: High electricity costs are a major disadvantage especially for energy-intensive semiconductor production. Industrial electricity pricing or targeted compensation under adjusted state aid rules is needed, while avoiding market distortions, especially relative to energy-intensive AI data centres and emerging industries.

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By coordinating actions on financing, bureaucracy, and energy costs, Europe can enhance the competitiveness of its semiconductor ecosystem, attract investment, accelerate innovation, and safeguard strategic independence.

6. Expanding International Cooperation

SEA calls to strengthen Europe's international cooperation in the semiconductor sector by building strategic partnerships with key global players, aligning trade agreements with industry and research needs, and ensuring flexible, adaptive collaboration that secures supply chains, promotes innovation, and reinforces Europe's position as a trusted and technologically leading partner worldwide.

Justification

Geopolitical necessity: In view of the rapidly evolving geopolitical landscape, Europe must actively pursue international cooperation to secure technological leadership and strategic independence.

Knowledge transfer and innovation: Strategic partnerships with countries such as Japan, Canada, Taiwan, and Korea promote the exchange of expertise, joint research and innovation projects, and the safeguarding of critical supply chains.

Trade agreements: EU trade agreements must be aligned with the needs of the semiconductor ecosystem to ensure fair market access, protection of intellectual property, and reciprocal standards.

Flexibility: International cooperation should be flexible and adaptive, allowing Europe to respond quickly to global shifts, technological breakthroughs, or supply chain disruptions.

Synergy with intra-European cooperation: Combining strong internal EU collaboration with targeted global partnerships strengthens Europe's technological leadership, strategic independence, and attractiveness as a trusted partner.

About Silicon Europe Alliance

The Silicon Europe Alliance brings together Europe's strongest high-tech clusters to unite local strengths into a powerful, cross-border network that supports innovation, growth, and strategic independence in the global technology landscape.

Vision

Silicon Europe is the leading European alliance of clusters in (micro)electronics and digital technologies, fostering transnational collaboration to drive innovation, competitiveness, and European technological sovereignty.

As a globally recognized meta-cluster, we connect the major regional ecosystems in semiconductors, photonics, cybersecurity, AI, quantum, and emerging technologies, enabling a green and resilient economy.

We serve as the trusted voice of SMEs and start-ups, ensuring their representation in shaping Europe's economic security and industrial future.

Strategic Targets

By 2030, Silicon Europe aims to:

- Play an active role in shaping and implementing Europe's semiconductor and digital industrial strategies, including the European Chips Act and future strategic initiatives.

- Strengthen collaboration between clusters, academic and research institutions, industry, and political institutions to close critical gaps in the value chain.

- Secure better and faster access to EU funding programmes and instruments for SMEs.

- Build a strong, visible brand for Europe's high-tech regions worldwide.

Silicon Europe Key Demands to Policymakers

- Recognise and support the strategic role of clusters as bridges between European policies and the SME community i.e. fostering European partnerships between SMEs, representing European companies at international fairs

- Actively involve clusters in expert groups, platforms and governance structures under the European Chips Act and related programmes.

- Accelerate and simplify funding procedures and processes to stay globally competitive, e.g. IPCEI.

- Include Cascade Funding / FSTP in future Chips JU calls to enable rapid, sustainable support for European microelectronics SMEs, strengthening the EU chips value chain. Silicon Europe clusters bring expertise as experienced project partners in managing and activating this mechanism.

Together, we make Europe's semiconductor regions stronger, more visible and more connected.